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File Code: 3410 **Date:** 10/25/00
Route To:

Subject: Southern Pine Beetle Infestation in the Chiricahua Mountains.

To: Douglas P. Hardy, District Ranger
Douglas Ranger District, Coronado National Forest

On September 26, 2000, John Anhold and myself of the Arizona Zone Office of Forestry and Forest Health; Steve Clarke of Forest Health Protection, Southern Region, and Brian Strom, Southern Research Station met with Carol Boyd, Coronado Supervisor's Office, Steve Gunzel, District Ranger Sierra Vista RD and yourself. The purpose of the field trip was to monitor bark beetle infestations in the Chiricahua Mountains. Prior to the field visit, Drs. Clarke and Strom placed Lindgren Funnel traps in an area of the forest known to be infested with bark beetles.

Trees showing signs of infestation were investigated for the presence of immature and adult beetles and any associates that might be present. Signs of infestation included fading of the foliage from light green to yellow to red, pitch tubes present on the bole of the tree, and boring dust around the base and in tree crevices. The traps were checked for beetles and specimens were sent to John Moser's laboratory in Pineville, LA for identification and to aid in his phoretic mite studies.

The host species in the area was a combination of Apache pine (*Pinus engelmannii*), Chihuahua pine (*Pinus leiopphylla*), southwestern white pine (*Pinus strobiformi*) and ponderosa pine (*Pinus ponderosa*). Chihuahua pine appeared to be the species most impacted by the infestation. The trees were infested with different species of beetles both of the genus *Ips* and the genus *Dendroctonus*. The *Dendroctonus* galleries in the cambial layer were consistent with the pattern associated with southern pine beetle (SPB) *Dendroctonus frontalis*. Several larger larval insects were seen in the outer bark; these were thought to be another species in the genus *Dendroctonus*. There were both adult and immature *Ips* beetles present in the trees. Gallery structures in the cambial layer indicated a history of the development of these insects as well. Two checkered beetle larvae were found. Checkered beetles or clerids are known to be effective predators of bark beetles and woodborers. These insects are particularly abundant in the southwest. Infested trees appeared to fade initially at the top of the crown with the discoloration proceeding down the tree to the base of the foliage. This is consistent with the pattern described in Western Forest Insects, Furniss and Carolin 1977, for the Arizona fivespined ips, *Ips lecontei* in ponderosa pine in central and southern Arizona. The upper bole is attacked first followed by the lower bole being filled in by this species, other species of *Ips* beetles, or by *Dendroctonus* species.

The insects harvested from the funnel traps were determined to be SPB, *Dendroctonus frontalis,* by a technician in John Moser's lab who prepared the insects and studied the seminal rods of 7 males. John was able to harvest several phoretic mites including one thought to be a new species.

The annual aerial detection survey was conducted in southern AZ on August 23, 2000. During this survey, 64 acres of SPB damage were recorded on private land, 18 acres on the Chiricahua National Monument and 11,620 acres on the Coronado National Forest. Additional acreage is expected when the data from a special October 18 flight over the Huachuca Mountains, the Peloncillo Mountains, and the Pinaleno Mountains are analyzed.

Further studies will include destructive sampling of infested trees to determine the actual progression of infestation, the insect species involved in the infestation and arthropod associates including phoretic mites and clerid predators. Trapping studies may be conducted to determine which insects are responding to selected pheromones in the infested areas. Additional ground checking of aerial detection survey data will be needed to determine if SPB is involved in other bark beetle infested areas in Arizona.

We will determine if the infestations have been initiated by Arizona fivespined ips, and watch the progress of the outbreak. Ips outbreaks are generally associated with drought events, which Arizona has been in for the past few years, or logging and thinning operations where slash or chips are allowed to remain near green trees. Most outbreaks of this insect are of short duration. The addition of SPB to an ips infestation may change the expected outcome of the outbreak even with abatement of the current drought conditions.

If you have any questions concerning the information included in this letter, feel free to call at 520-556-2072.

/s/ Bobbe Fitzgibbon
Bobbe Fitzgibbon
Entomologist

CC: Leonard Lucero, John McGee, Brian Strom
Douglas Parker, Carol Boyd
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